

II Control

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Circuit/Mechanical Descriptions

This section describes circuitry for changing the magnification of the image intensifier field size (also called “mag mode”). Pressing the field size button changes the field size from the normal position to two smaller field sizes-- MAG1 and MAG2. On system bootup, the field size default is NORMAL. You can set parameters at the workstation that will cause the system upon bootup to default to either of the two other modes.

The image intensifier in your system may be 14-inch or 16-inch (36 cm or 41 cm). The field sizes for each selection are the following:

Operator Selection	Image Intensifier Size	
Norm	14 in (36 cm)	16 in/ (41 cm)
Mag1	10 in/ (25 cm)	14 in/ (36 cm)
Mag2	7 in/ (18 cm)	9 in/ (23 cm)

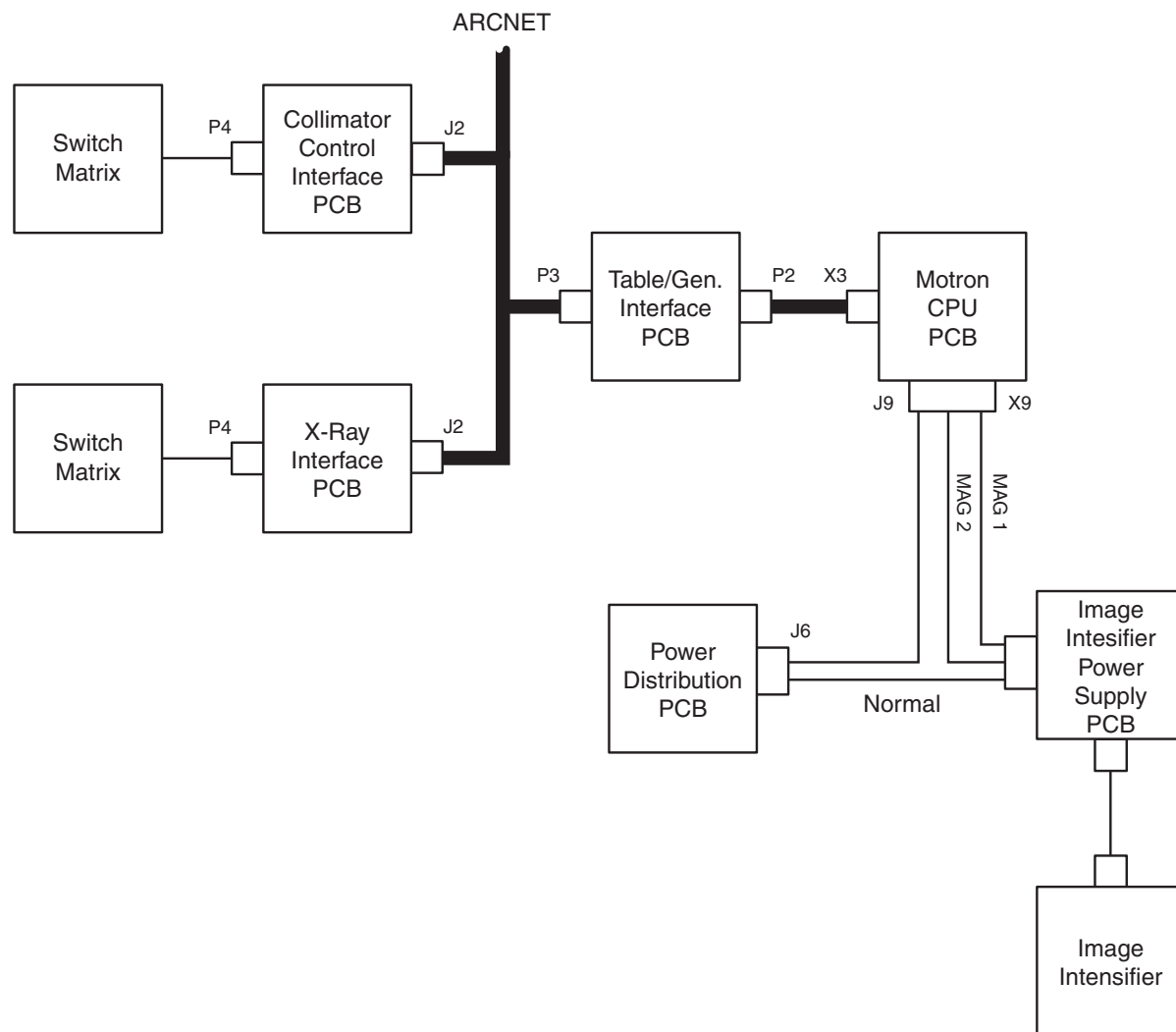
In order to increase image quality, either the MAG1 or MAG2 signal modifies the setup between the II and the II power supply. During MORMAL, the 24 VDC is directly to the II power supply from J6 of the power distribution PCB. If MAG 1 or MAG2 buttons are pressed, the 24 VDC from J6 goes to the Motron PCB and then issues from Motron X9 to the II power supply.

The image intensifier is used during fluoro mode. Therefore when FILM mode is enabled, the magnification control buttons are blocked.

Mag mode control consists of the following sub-functions (see *Magnification Control Circuit Description* illustration, next page):

- Focusing Lens Power
- Human Interface
- Digital communication
- Mode selection

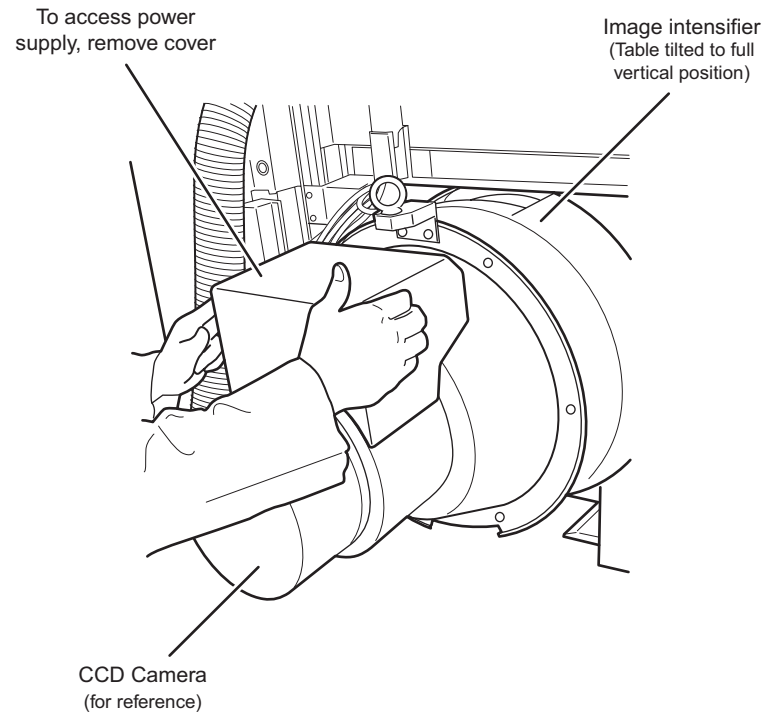
II Control



II Control Circuit Description

Focusing Lens Power

The power to the focusing lens is provided by the image intensifier power supply, as shown in the following:



Removing Cover, Image Intensifier Power Supply

The image intensifier power supply has three 24-VDC inputs, one each for NORMAL, MAG1, and MAG2. The 24 VDC for all three modes NORMAL comes in from power supply PS2, as shown in the *Power Distribution* chapter of this manual.

The Motron employs onboard relays that respond to signal communication switching the 24 VDC from NORMAL to either MAG1 or MAG2.

Human Interface

The human interface for mag mode control occurs at the X-ray control console and the VFD image assembly. In each location, you can press the field size button to operate the image intensifier, and view status LEDs on a switch matrix. Mag mode control commands or status do not appear on the VFDs.

When you press the field size button on the switch matrix, the resulting message is comprised of a COL (column) signal and a ROW signal that uniquely identify which button was pressed. The COL/ROW message transmits to the collimator or X-ray control interface PCB via P4.

Also at P4, the interface PCBs return LED status signals back to the switch matrix. There are three LEDs—for indicating NORMAL, MAG1, and MAG2.

Digital communication

The X-ray control console interface PCB processes the COL/ROW message to digital format, and places it on the ARCNET. This is communicated to the table/generator interface (TGI) via connector P3.

Mode selection

The TGI communicates the command via P2 to X3 of the Motron CPU PCB. Onboard relays provide the switching action needed to respond to the message sent. For MAG1, only one 24 VDC line is energized to the image intensifier power supply. For MAG2, both lines are used.

Fault Isolation

Functional Test	Failure	Possible Cause
Field Size Functional Test	No mode change when commanded from image assembly	- Defective switch matrix in image assembly - Defective collimator control assembly
	No mode change when commanded from X-ray control console.	- Defective switch matrix in X-ray control console. - Defective X-ray control interface assembly
	No mode change when commanded from either location	- Blown fuse F6 in PS2 output - Loose electrical connections - Defective table/generator interface PCB - Defective Motron CPU PCB - Defective image intensifier power supply - Defective image intensifier
	Selected mode LED off	Defective interface assembly

Functional Tests

Field Size Test

To verify that the mag mode control function is operating correctly, do the following:

1. Perform system bootup, verifying no error messages.
2. Verify that NORMAL LED is on at both locations.
3. At one location, press the MAG1 switch, verifying that the MAG1 LED illuminates at both locations.
4. Take X-ray shot.
5. On the workstation left-hand monitor, verify that the field size changed from NORMAL to MAG1.
6. Repeat the preceding steps for MAG2.

Adjustment

Not applicable.

Miscellaneous

(Not applicable)